INDOOR AND OUTDOOR CONCENTRATION OF PARTICULATE MATTER, ELEMENTAL CARBON AND ORGANIC CARBON AT HOMES IN FRESNO (FACES STUDY).

Maria J. Lopez[1], Elizabeth M. Noth[2], SK Hammond[2].

[1] Public Healht Agency of Barcelona. Lesseps, 1. 08023. Barcelona (Spain), mjlopez@aspb.cat

[2] School of Public Health, University of California. Berkeley (California).

Background and aims
The Fresno Asthmatic Children's Environment Study (FACES) was an eight-year epidemiological study focused on the determination of the effects of air pollution on the natural history of asthma in children who reside in Fresno, California. The objective of this work is to describe the indoor and outdoor home concentrations of particulate matter (PM), elemental carbon (EC) and organic carbon (OC).

Methods
Between February 2002 and February 2003, a home-intensive exposure assessment was carried out at a subset of homes. 24-hr integrated samples of PM2.5, PM10, EC and OC were collected inside and outside 84 homes over 5 days during two weeks (28 homes were sampled twice). Variables related to activities at home such as candles burned or fireplace used were also recorded at the same period. A descriptive analysis including median, interquartile ranges and indoor/outdoor ratios was assessed. Correlation between indoor and outdoor concentration was assessed using Spearman's correlation.

Results
The number of indoor/outdoor paired samples included in the study were 502 for PM2.5, 507 for PM10, 243 for EC and 243 for OC. The indoor/outdoor median ratios in summer for PM2.5, PM10, EC and OC were 0.80, 0.72, 0.86 and 1.34 respectively. The indoor/outdoor median ratio in winter were 0.63, 0.91, 0.80 and 1.21 respectively. The correlation between indoor and outdoor concentration was positive and statistically significant for all the pollutants in both seasons. Higher concentration of different pollutants were found in homes with presence of some of the indoor activities studied.

Conclusions
The indoor/outdoor correlation found for all the pollutants studied suggests that ambient pollution is one of the main sources for these indoor pollutants. However, the differences found in indoor concentration according to the presence of indoor activities highlight the importance of other indoor potential sources of indoor pollution.